PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Yury Alexeevich GROMAKOV, et al.

Serial No.: 10/510,884 Group No.: 2617

Filed: October 8, 2004 Examiner: S. Khan

For: METHOD FOR CELLULAR COMMUNICATIONS

Attorney Docket No.: U 015285-7

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

The following is appellant's brief on appeal of the final rejection of all the claims of the above application, all the claims being claims 1 - 20 subject to entry of an Amendment presenting claims 1 - 18, 20 and 21.

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REAL PARTY IN INTEREST

The real party in interest is the inventors Yury Alexeevich Gromakov and Vlacheslav Alexeevich Shevtsov.

RELATED APPEALS AND INTERFERENCES

There are no related appeals and/or interferences.

STATUS OF CLAIMS

All the claims, claims 1 - 20 as of June 23, 2006, as in the Claims Appendix therefor are rejected and appealed.

STATUS OF AMENDMENTS

An Amendment was filed April 24, 2006, and was entered for purposes of appeal by the Advisory Action of June 19, 2006.

An Amendment has been filed on even date herewith and has not yet been entered to cancel claim 19 and add claim 21.

SUMMARY OF CLAIMED SUBJECT MATTER

The essence of the invention is described at page 9, line 19, to page 10, line 9, and with reference characters to Fig. 5 at page 13, lines 6 to 20. In a cellular communications system OMC (page 13, line 9), a satellite location determination system GPS (page 13, line 15) provides a geographical location to a mobile station MS (page 13, line 6) for a base station BTS (page 13, line 6) to transmit map coordinates of a border of a cell of the geographical location of the mobile station MS and a neighboring cell (page 13, line 10) to the mobile station MS. The mobile station MS then compares GPS location data (page 13, line 15) of the mobile station MS with the map coordinates of the border to determine when changing ("handover," page 13, line 28) a cell of its location (page 13, line 18).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Independent claims 1 and 20 and, thereby, all the other, dependent claims are rejected under 35 USC 103 for obviousness from the cited Soliman and Grayson, et al. patent publications. In particular, at page 4, lines 16 - 20, of the final Action of December 23, 2005, rejection is found because:

> Soliman does not disclose that the comparison of current data of its location and the coordinates of cell borders is carried out in the mobile station. The examiner maintains that the concept that the comparison of current data of its location and the coordinates of cell borders is carried out in th mobile station was well known as taught by Grayson et al.

In the Advisory Action of June 19, 2006, 11 (continuation), B, this is continued:

> The Grayson et al reference was used to show limitations not met by the primary reference of Soliman. Soliman does not disclose that "the comparison of current data of its location and the coordinates of cell borders is carried out in the mobile station." Grason et al show the comparison of the mobile station's position vis-a-vis the current cell indicating that the mobile station is approaching the edge of the cell (page 8, paragraph 97). Also, in page 1, paragraph 11, Grayson et al also show that although the mobile station data is obtained from a navigation apparatus, the mobile station could also perform the functions of a navigation apparatus. Further, it is well know to transfer functionality between two different elements, in this instance, between the mobile station and the satellite access node. See In re Fine, 837 F2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 Fed 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Inasmuch as "Soliman does not disclose that the comparison of current data of its location and the coordinates of cell borders is carried out in the mobile station," as claimed, the grounds of rejection appealed are that Grayson, et al. or "well known" make this obvious, particularly as Soliman does not disclose sending a map for this to the mobile station, either.

ARGUMENT

The claimed invention requires a mobile station to use its position and map data to determine a transition or handover to a neighboring cell. Therefore, for each transition, the mobile station has to send its location data to a base station only once, to receive the map data, and not thereafter to find out when cell transition should occur as a result of movement of the mobile station. This minimizes data transmission between the mobile and base stations despite the map data sent to the mobile station, because the mobile station is expected to move to the cell border slowly as compared to the frequency with which location data would have to be sent to assure accurate determination of border transition.

If the mobile station is held by a pedestrian, for example, it may take tens of minutes for the pedestrian to transition the mobile station across a cell border, but if the mobile station is in a car, train or plane, the transition may happen in a shorter interval of minutes or less. Therefore, the mobile station of the prior art must send its position data to the base station or "satellite access node" within each such shorter interval; whereas, the repeated data transmissions thereof are avoided by the claimed mobile station that determines its own transition.

In the present case where the Soliman patent publication does not disclose that the comparison of current data of its location and the coordinates of cell borders is carried out in the mobile station, the Grayson, et al. patent publication is relied on for disclosure of this. However, paragraph 98 of the Grayson, et al. publication shows that there is no such disclosure. Paragraph 98 of the Grayson, et al. publication specifically indicates the contrary, that "... the satellite access

node 1a determines that the mobile station must be handed over to another cell ...." That the satellite access node 1a is not the mobile station 4a, 4b is confirmed by Fig. 1 of the publication.

The test for an implicit showing of obviousness is what the combined teachings of the references, knowledge of ordinary skill in the art and the nature of the problem to be solved would have suggested to those of ordinary skill, relying importantly on objective evidence, as described in MPEP 2143.01, citing *In re Fine* and *In re Jones*, above. In this case, the combined teachings of the references fail to disclose the claimed cell transition from the mobile station and such failure shows the knowledge of ordinary skill in the art. The problem to be solved, limiting data transmissions, faced those in the prior art, too, and there is no objective evidence that they appreciated it or solved it in the way claimed. Therefore, the claimed invention is not obvious from the combination of the references of the rejection.

To establish *prima facie* obviousness, MPEP 2143.03, citing *In re Fine*, above, requires that all the claim limitations must be taught or suggested by the cited art. As above, they are not here.

The applicant cannot agree, either, with the opinion of the examiner that the step of sending a fragment of a map to a mobile station is known from the Soliman patent publication. Only connections are shown in Fig. 1 in this patent, and it is not described in any way how the information is transmitted through these connections. It only follows from the references to paragraphs 19, 15, 45 that the digital map contains cellular borders, but it close not mean that this map is transmitted to a mobile station. It follows from the reference to paragraph 16 that a GPS receiver is disposed on a mobile station. It follows from the reference to paragraph 45 that the distance between a mobile station and a basic station is calculated on the base station. From an

additional reference to paragraph 105 follows only that position to be calculated is sent from BSC to MSC or the wireless unit but this position to be calculated is not a fragment of a map. Data to be sent do not contain not only the characteristics of base stations, but the data to be sent do not also contain their coordinates and the coordinates of cellular borders.

Thus, the proposed technical solution achieves a decrease of a load on network interfaces and a provision of a reliable work when "handover" or "roaming" at high speeds of movement of the mobile station.

It is not stated anywhere that a fragment of a map is sent to a mobile station. This map fragment according to the Soliman patent publication is in the control center. But it should be noted that due to sending a fragment of the map to a mobile station, this station may independently determine the transition to another cell and set parameters of communication with corresponding base station, which is necessary in order to resolve the stated object.

The applicant cannot agree to the opinion of the examiner that the step of receiving the data performing handover or roaming at a working station is evident from a combination of features of the Soliman and Grayson et al patent publications. In Soliman, paragraph 47 is stated that the mobile station identifies a pilot-signal of the base station. This step can not be performed on a base of data from the map, since the fragment of the map, as shown above, is not sent to the mobile station. Its result can not be a determination of the transiting to another cell. In Soliman it is clearly pointed out (page 3, paragraph 45), that the distance of the mobile station from the base station is calculated on the base station.

In the Grayson, et al. patent publication, in paragraph 97 on page 6, is mentioned that coordinates of the mobile station are transmitted to "satellite access node 1a", and that may be

performed a comparison of current coordinates of the mobile station and the coordinates of cellular borders, and in paragraph 11 on page 1 is stated only, that the mobile station has navigational capabilities. Moreover, in the next paragraph 98 it is clear wrote, that satellite access node 1a determines that the mobile station must be handed over to another cell.

Thus, the claimed combination is neither anticipated nor obvious from the cited art. Nowhere is it shown that transitioning to another cell of a cellular communication is performed in the mobile station.

Respectfully submitted,

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CLAIMS APPENDIX

1. (previously presented) A method for cellular communications, characterized in that:

a file in electronic form with fragments of a digital geographical map of the vicinity is preliminary introduced into a control center of a cellular communications system, the map comprising coordinates and characteristics of base stations arranged in cells and geographical coordinates of the borders of the cells, wherein in the process of radio communications, data on the location of a corresponding mobile station for communication therewith are determined with the aid of a receiver of a satellite location determination system, which receiver is built in a mobile station, and are transmitted through a base station to the control center of the cellular communications system, and the file of a fragment of the digital geographical map is transmitted from the control center of the cellular communications systems through a corresponding base station to a mobile station, the map comprising coordinates and characteristics of the base station of that cell where this mobile station is, coordinates and characteristics of the base station of neighboring cells with coordinates of their borders; and

then, in the mobile station, a comparison of current data of its location and the coordinates of cell borders is carried out when there is a transition of the mobile station to another cell - "handover" - and/or when there is a transition from one cellular communications network to another - roaming - data on completion of the "handover" or conduction of the roaming and changes of the working parameters of communications channels and produced in the mobile station and transmitted to a corresponding control center of the cellular communications system.

2. (original) The method according to claim 1, characterized in that synchronization of operation of the mobile and base stations is carried out in accordance with signals of a satellite location determination system.

3. (previously presented) The method according to claim 1 , characterized in that the dimension of the fragment of the geographical map transmitted to the mobile station and the periodicity of transmission of data on its location by that mobile station to the control center of the cellular communications system are changed depending on the speed of movement of the mobile station.

4. (previously presented) The method according to claim 1 , characterized in that the current data on the location of the mobile station are used to control parameters of adaptive multibeam antenna systems of base stations communicating with the mobile station, including parameters for directing a directional characteristic of antenna systems toward the mobile station.

5. (previously presented) The method according to claim 1, characterized in that microcells within a cell that have working communication parameters different from working communication parameters of the instant cell, in particular other types of radio interfaces, protocols, communication standards, are dedicated, wherein coordinates of border and working parameters of these microcells, recorded in the control center of the cellular communications system, are transmitted through corresponding base stations to mobile stations located in the microcells.

6. (previously presented) The method according to claim 1, characterized in that the height of location of a mobile station above the surface of the earth, in respect to which corresponding cells or microcells are dedicated, is selected as one of the working parameters, and a vertical "handover" is provided for.

7. (previously presented) The method according to claim 1, characterized in that the power level of transmitters of mobile and base stations are adjusted depending on their distance from one another on the basis of location data of the mobile and base station, and also of digital geographical maps, used in the control center of the cellular communications system.

8. (previously presented) The method according to claim 1, characterized in that during the transmission of the file of the fragment of the digital geographical map from the control center of the cellular communications system through a base station to a corresponding mobile station, adaptation of the dimensions and configuration of the cells and also conditions providing for "handover" to a load created by mobile stations in a cell are carried out.

9. (previously presented) The method according to claim 1, characterized in that depending on the location of a mobile station in a definite cell or definite zone of cellular network communication, of each mobile station, the priorities of access to communications services of the extreme qualitative communication characteristics are determined or access to the communications services or a portion of the communications services on separate sections of the cellular communications zone or the cell is eliminated.

10. (previously presented) The method according to claim 1, characterized in that a pointwise or zone tariffing of communication services provided to clients is provided with an arbitrary configuration of the zones.

11. (previously presented) The method according to claim 1, characterized in that current data on the location of a mobile station, which are available to a mobile client of a cellular network on a global scale, are used to select a mobile communications network and an accessible type of service within that network by a corresponding programming of the mobile station by a client or operator of mobile communications, including taking into account tariffs for communication services in communication networks of different operators.

12. (previously presented) The method according to claim 2, characterized in that the current data on the location of the mobile station are used to control parameters of adaptive multibeam antenna systems of base stations communicating with the mobile station, including parameters for directing a directional characteristic of antenna systems toward the mobile station.

13. (previously presented) The method according to claim 3, characterized in that the current data on the location of the mobile station are used to control parameters of adaptive multibeam antenna systems of base stations communicating with the mobile station, including parameters for directing a directional characteristic of antenna systems toward the mobile station.

14. (previously presented) The method according to claim 2, characterized in that microcells within a cell that have working communication parameters different from working communication parameters of the instant cell, in particular other types of radio interfaces, protocols, communication standards, are dedicated, wherein coordinates of border and working parameters of these microcells, recorded in the control center of the cellular communications system, are transmitted through corresponding base stations to mobile stations located in the microcells.

15. (previously presented) The method according to claim 3, characterized in that microcells within a cell that have working communication parameters different from working communication parameters of the instant cell, in particular other types of radio interfaces, protocols, communication standards, are dedicated, wherein coordinates of border and working parameters of these microcells, recorded in the control center of the cellular communications system, are transmitted through corresponding base stations to mobile stations located in the microcells.

16. (previously presented) The method according to claim 2, characterized in that the height of location of a mobile station above the surface of the earth, in respect to which corresponding cells or microcells are dedicated, is selected as one of the working parameters, and a vertical "handover" is provided for.

17. (previously presented) The method according to claim 3, characterized in that the height of location of a mobile station above the surface of the earth, in respect to which corresponding cells or microcells are dedicated, is selected as one of the working parameters, and a vertical "handover" is provided for.

18. (previously presented) The method according to claim 2, characterized in that the power level of transmitters of mobile and base stations are adjusted depending on their distance from one another on the basis of location data of the mobile and base station, and also of digital geographical maps, used in the control center of the cellular communications system.

19. (previously presented) The method according to claim 3, characterized in that the power level of transmitters of mobile and base stations are adjusted depending on their distance from one another on the basis of location data of the mobile and base station, and also of digital geographical maps, used in the control center of the cellular communications system.

20. (previously presented) In a method for cellular communications, the improvements comprising:

introducing into a control center of a cellular communications system an electronic file of a digital geographical map of geographical coordinates of borders of cells defined by base stations of the cellular communications system having coordinates and characteristics;

determining a location of a mobile station of the cellular communication system with a receiver of a satellite location determination system in the mobile station;

transmitting the location of the mobile station through one of the base stations to the control center;

transmitting from the control center through the one of the base stations to the mobile station the coordinates and characteristics of the one of the base stations and, as determined from the map, the coordinates and characteristics of at least one of the base stations neighboring the one of the base stations and geographical coordinates of at least the one of the borders of the cell thereof with the cell of the one of the base stations; and

then, in the mobile station, comparing another determination of a current location of the mobile station at least with the geographical coordinates of the one of the borders of the cell of the neighboring base station to determine a transition of the mobile station across the border of the neighboring base station for use from the mobile station of the coordinates and characteristics of the neighboring base station.

EVIDENCE APPENDIX

No evidence is submitted.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.